Commonwealth of Kentucky
Division for Air Quality

PERMIT STATEMENT OF BASIS

CONDITIONAL MAJOR PERMIT # F-03-020 (REVISION 2)
TRIM MASTERS, INCORPORATED
1051 WITHROW COURT, BARDSTOWN, KY
JANUARY 20, 2006
BRIAN BALLARD, REVIEWER
PLANT ID # 21-179-00044
AI # 3274
ACTIVITY ID # APE20050002

SOURCE DESCRIPTION:
The Trim Masters, Inc., (TMI) manufacturing operation in Bardstown, Kentucky produces trimmed automobile door panels. The facility operations include substrate preparation, vacuum forming, edge folding, ornament attachment, accessories, and final assembly. The door panel can be made from either a single pressed wood mat, an injection molded plastic part, or a combination injection molded plastic/wood mat. Substrate presses and injection molding machines are used in the substrate preparation process. Vacuum forming is the process of bonding a vinyl layer to the face of the substrate with adhesive. Edge folding is the process of crimping and adhering the overlapped vinyl, which was applied to the front surface of the door panel in the vacuum forming process. Ornament attachment is the process of attaching a decorative fabric or leather ornament to the door panel. Injection molding produces door and seat accessory parts. The final door panel is fully assembled by mechanically attaching the various components produced in upstream processes.

The conditional major permit, which was issued on June 2, 2004, covers sixteen (16) spray booths, sixteen (16) electric ovens, and two (2) substrate presses.

REVISION 2:
On November 21, 2005 DAQ received a letter and application from TMI for the retooling of the Bardstown facility's Toyota Camry Front and Rear Door production lines and the revising of the existing Emission Points. The changes are scheduled to begin with the full operation of the newest Camry model year starting around February 1, 2006. The retooling does not create any new emission sources at the facility and will introduce a new solvent-based adhesive, Bostix LADH 1211. The use of this new adhesive will affect emissions from EP01. The revising of existing emission points consists of the combining of production areas currently emitted at EP02 and EP09. The adhesive spray booth and electric oven located at EP02 will be relocated to EP09. EP09 currently has two adhesive spray booths and one electric oven. EP02 is deleted from the permit and the description for EP09 is revised.

On December 22, 2005, DAQ received a construction permit application from TMI to install one Vacuum Former for the production of Sequoia and Tundra upper door panels at the TMI manufacturing operation in Bardstown. The new Vacuum Former will be designated as Vacuum Former #1 and will be added to the current DAQ Emission Point, EP01. In addition to the vacuum forming process, the Sequoia and Tundra Upper Door Panel will require an Edge Fold operation. This operation will be emitted through the current DAQ Emission Point EP08, Camry Leather Ornament. The equipment will be moved to the Bardstown facility in January of 2006. The descriptions for EP01 and EP08 are revised.

REVISION 2 (CONTINUED):
On January 4, 2006, the Division Air Quality (DAQ) received an updated stack location drawing for the TMI Bardstown facility and a DEP7007N form summarizing the stack parameters for the site. This information was used to conduct a source-wide analysis of toxic emissions.

The modifications to Permit V-03-020 (Revision 1) are:

- Page 2, Section B – EP01(01) – there are now four spray booths and four ovens.
- Page 5, Section B – EP02(04) – the spray booth and oven have moved to EP09. This emission point is deleted.
- Page 14, Section B – EP08(13) – the description is changed from Camry Leather Ornament to Sequoia / Tundra Edge Fold.
- Page 15, Section B – EP09(14) – there are now three spray booths and two ovens.
- Page 24, Section D – the requirement, "VOC emissions as measured by methods referenced in 401 KAR 50:015, Section 1, shall not exceed limitations specified herein," is added.
- Page 28, Section F – the language of F(11) is replaced with the following language, "Results of performance test(s) required by the permit shall be submitted to the Division by the source or its representative within forty-five days or sooner if required by an applicable standard, after completion of the fieldwork."
- Page 34, Section G – Risk Management Provisions – the RMP Reporting Center address has been updated.
- Section G(d) for construction, start-up and initial compliance demonstration requirements has been updated.

COMMENTS:
A source-wide analysis of toxic emissions was conducted to evaluate the applicability of 401 KAR 63:020, potentially hazardous matter or toxic substances. The ISCST3 air dispersion model was used to model emissions of air toxics emitted by the facility. The determination of the type and quantity of air toxics emitted by the facility is based on the potential to emit emission calculations in the application received on December 22, 2005. Stack locations and stack parameters are based on the updated stack location drawing and DEP7007N form received on January 4, 2006. Some important notes are:

EP5 is not included in the air dispersion model because it is located in a warehouse offsite.

EP10 vents through the stack serving EP4.

Meteorological data is from surface station 93821 (Standiford Field, Louisville) and is from years 1990 – 1994.

The air toxics emitted and their respective emission rates from each stack are listed in Table 1. The modeled concentrations and the data the concentrations were compared to for the 401 KAR 63:020 applicability determination are listed in Table 2.

	Emissions (g/s)							
Air Toxic	Formaldehyde	n-Hexane	Methanol	Phenol	Toluene	Vinyl Acetate	m-Xylene	MEK
CAS No.	50-00-0	110-54-3	67-56-1	108-95-2	108-88-3	108-05-4	108-38-3	78-93-3
EP1	0.00025	0.16140	0.17218		0.16405	0.00076		0.23914
EP2/EP9		0.14339	0.04304		0.09255			
EP3	0.00953			0.02223				
EP4/EP10	0.00001	0.19379	0.07667		0.20109	0.00004		
EP6		0.05456	0.03049		0.04813			
EP7		0.08404	0.03893		0.06275			
EP8					0.04498		0.04498	

Table 1 – Air Toxic emissions from each stack

Air Toxic	CAS No.	Modeled Concentration (mg/m^3) 1-hour	Modeled Concentration (ug/m^3) Annual	PRDV Cancer (ug/m3)	Source	PRDV Non Cancer (mg/m^3)	Source	ADRV REL (mg/m^3)	ADRV IDLH/10 (mg/m^3)	ADRV ERPG-1 (mg/m^3)
Formaldehyde	50-00-0	0.0006	0.0072	182	OAQPS	0.0098	ATSDR	0.094	2.5	1.2
n-Hexane	110-54-3	0.1259	4.3560			0.2	IRIS		390	
Methanol	67-56-1	0.0754	2.7561			4	IRIS	28	790	260
Phenol	108-95-2	0.0014	0.0156			0.2	CAL	5.8	96	38
Toluene	108-88-3	0.1197	4.2475			0.4	IRIS	37	190	190
Vinyl Acetate	108-05-4	0.0003	0.0078			0.2	IRIS			18
m-Xylene	108-38-3	0.0139	0.3172						390	
MEK	78-93-3	0.1033	2.3684			5	IRIS	13		

PRDV = Prioritized Chronic Dose-Response Value
ADRV = Acute Dose-Response Value
REL = California EPA Reference Exposure Level for no adverse effects
IDLH/10 = One-tenth of levels determined by NIOSH to be imminently dangerous to life and health, approximately comparable to mild effects levels for 1-hour exposures.
ERPG-1 = US DOE Emergency Removal Program guidelines for mild or transient effects for 1-hour exposures.

Table 2 – Air Toxic Concentration and health based standard data.

REVISION 2 (CONTINUED):

COMMENTS:
The concentrations of the potentially hazardous matter and toxic substances at the TMI property boundary must be less than the most up to date health based standards recommended by the EPA, Office of Air Quality Plan and Standards (OAQPS). The current health based standards recommended by the EPA-OAQPS are the prioritized chronic dose-response values located at http://www.epa.gov/ttn/atw/toxsource/table1.pdf and the acute dose-response values located at http://www.epa.gov/ttn/atw/toxsource/table2.pdf.

The units for cancer risk in Table 1 are $1/(\mu g/m^3)$. This is referred to as unit risk. The unit risk must be converted into a concentration so that it can be compared with modeled ambient concentrations. Unit risk can be converted into concentration using the following methodology:

Let us define the term "Maximum Allowable Emission Level" x unit risk (from Table 1) = cancer risk.

Maximum Allowable Emission Level (MAEL) = risk / unit risk

The acceptable "target risk" for cancer endpoints is one-in-one million (10^{-6}) (unit-less)

MAEL ($\mu g/m^3$) = (1×10^{-6}) / unit risk

This is the value that should be compared to the modeled concentration of a pollutant.

The acceptable "target risk" for non-cancer endpoints is a hazard index of 1 or less, where hazard index is defined as:

$$Hazard\ \ Index = \frac{Modeled\ \ Concentration\ of\ \ X}{Concentration\ of\ \ X\ \ in\ Table}$$

The modeling results indicate that no air toxic emitted from the TMI Bardstown facility is present at concentrations that exceed the aforementioned health based standards. Multiple runs were made using the ISCST3 model to evaluate the impacts of each toxic. The ISCST3 modeling results for formaldehyde are attached as an example.

REVISION 1:
TMI is in the process of retooling their Toyota Avalon front and rear door production lines so that they can begin full operation of the newest Avalon model year, beginning around January 1, 2005. These process changes require a minor permit revision, pursuant to 401 KAR 52:030, Federally Enforceable Permits, Section 14, Minor Permit Revisions. Three existing spray booths and ovens will be replaced with newer models that will use less adhesive than the existing booths and ovens. Sunnex 913HL will be replaced with Sunnex 379, and less adhesive will be used overall; consequently, plantwide VOC and HAP emissions will actually decrease.

The modifications made to permit # F-03-020 are:

- Page 5, Section B–emission point 02(04) – there is only one spray booth (SB-9) and oven located at this emission point now.
- Page 11, Section B–emission point 05(08) – spray booth SB-10 and one FUSO electric oven were moved to this point from emission point 02(04).
- Page 12, Section B–emission point 06(09) – there is only one spray booth (SB-14) and oven located at this emission point now. Spray booth SB-14 will be replaced with a newer model.
- Page 13, Section B–emission point 07 (10) – spray booth SB-15 and one FUSO electric oven were moved to this point from emission point 06(09). Spray booth SB-15 will also be replaced with a newer model.
- Page 23, Section C–Insignificant Activities – item 16 now reads, "Kenaf Press– A blend of natural Kenaf fiber (50%) and polypropylene is softened by electric heat and pressed into the panel shape required. This equipment was installed in 2003, for full operation in 2005. This unit will be vented outside for industrial hygiene purposes." It originally stated that this press would be in operation in 2004 and would not be vented outside.

COMMENTS:
Potential to emit (PTE) estimates for emission points # 1, #2, #4, #5, #6, #7, #8, #9 and #10 are based on maximum throughput estimates considering process bottlenecks and not on the rated capacity of the applicator in the spray booth(s) at these emission points. Process bottlenecks are attributed to mechanical limitations of the vacuum former machines, injection molding machines and the Kenaf Press machine that are associated with these emission points. The vacuum former bottleneck is stated as being a 30-second vinyl heating time, and 22 second mechanical load, unload, and material transfer time. Similarly, the injection molding bottleneck is stated as being a 30 second cool-down time and 30 seconds of mechanical load, unload, and material transfer time. The Kenaf Press has a total processing time of 72 seconds per shot.

Since no restrictions on hours of operation or types of adhesives are specified in the permit, it is determined by the Division that no additional language is necessary to clarify this. Compliance with conditional major limitations and 401 KAR 63:020 is solely based on emissions of VOC and HAP, not on any specific material.

APPLICABLE REGULATIONS:
401 KAR 63:060 - List of hazardous air pollutants, petition process, lesser quantity designations, and source category list.
401 KAR 63:020 - Potentially Hazardous Matter or Toxic Substances, applies to the potentially hazardous matter and toxic substance emissions from affected facilities.
401 KAR 59:010 - Particulate Matter, applies to the particulate matter emissions from affected facilities constructed on or after July 2, 1975.

EMISSION AND OPERATING CAPS:
Trim Masters, Inc., has requested voluntary permit limits of less than 90.0 tons per year of volatile organic compounds (VOC), 9.0 tons per year of individual hazardous air pollutants (HAP) and 22.5 tons per year of combined HAPs.

PERIODIC RECORD KEEPING:
The permittee shall maintain monthly records of the purchase and usage of the adhesives, hardeners, and cleaning solvents or any other HAP/VOC containing material. HAP/VOC emissions shall be calculated and recorded on a *monthly* basis. These records shall be summarized in tons per month HAP/VOC emissions; subsequently, tons of HAP/VOC emissions per 12-month period shall be recorded. This 12-month period shall be based on a 12-month rolling total representing the most recent year. In addition, these records shall comply with HAP/VOC emission limitations listed herein for the conditional major limitations. These records, as well as purchase orders and invoices for all HAP/VOC containing materials, shall be maintained on site for a period of five years from the date the data was collected and shall be provided to the Division upon request.

CREDIBLE EVIDENCE:
This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has only adopted the provisions of 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12 into its air quality regulations.